PROPOSED ACTION
KAIBAB PLATEAU (NKRD) WIRELESS COMMUNICATIONS SITES
(VT HILL & TELEPHONE HILL WIRELESS COMMUNICATION FACILITIES)
KAIBAB NATIONAL FOREST - NORTH KAIBAB RANGER DISTRICT

June 2018

INTRODUCTION / BACKGROUND

The proposed VT Hill and Telephone Hill Wireless Communication Facilities project is needed to improve wireless personal communication services in the Grand Canyon Area (GCA) and North Kaibab Ranger District (NKRD) of the Kaibab National Forest (KNF). The proposed system will enhance wireless telephone communications and broadband internet service for KNF operations, Grand Canyon National Park (GCNP) operations, travelers on State Route 67, KNF and GCNP visitors, and public safety government agencies.

The public and government agencies have come to expect reliable wireless telephone and internet service while traveling major transportation corridors and visiting major recreation destinations such as GCNP for general use and emergencies. The Grand Canyon is a world-renowned tourist destination. New wireless technologies are now in demand that not only provide telephone service but internet service as well, increasing the need for additional wireless communications facilities. The State Highway 67 (SR 67) corridor from Jacob Lake to the GCNP North Rim currently is not receiving adequate or reliable wireless service from any of the wireless providers.

GCNP, the Town of Tusayan, KNF, and Coconino County in conjunction with wireless industry representatives, have cooperatively undertaken a process to address wireless communications needs for the GCA. This proposed action is a product of that planning effort.

The purpose of this proposed action is to design and implement wireless communications facilities consistent with the developing system that will improve governmental and personal wireless communication services on the SR 67 corridor where such services are currently not available and/or reliable. In response to this need to improve wireless service DW Tower proposes to construct two new towers and associated facilities on the NKRD for colocation use by the licensed wireless carriers to improve and enhance wireless telephone and broadband internet services.

TOWER NEEDS

There is a need for additional colocation towers to provide antennae space for the FCC licensed carriers to broadcast and receive cellular telephone signals from the public and governmental users on the SR 67 corridor and GCNP North Rim areas. Currently wireless service is inadequate in parts of North Rim Village and other areas within GCNP along the SR 67 corridor on NKRD. Wireless signal propagation studies and wireless users complaints verify the SR67 corridor within KNF is currently not receiving adequate or reliable wireless service.

Typically, to provide seamless wireless coverage for all the licensed wireless providers, a tower is needed approximately every 7 miles unless extremely tall towers or mountain tops are used. Each provider has different technical needs regarding distance between towers based on propagation characteristics of their radio frequencies. Therefore, to develop a collocation corridor plan that minimizes the proliferation of towers and meets the needs of all the licensed carriers, all carrier propagation needs must be addressed. For instance, Verizon and AT&T have very different needs

regarding distance between towers, because of differences in how far their signals will travel. After all of the tower sites are developed, the licensed carriers will be able to provide reliable coverage for the SR 67 corridor and tie into the developing system inside GCNP.

MICROWAVE BACKHAUL NEEDS

To provide reliable wireless telephone and broadband internet service there is a need for increased microwave backhaul capacities to connect voice and data wireless signals coming to and from the GCNP area to the regional landline telephone system.

All wireless carriers must connect their cell sites to the landline telephone system (backhaul) for calls from subscribers to be directed to their destination. This is usually accomplished by having the local telephone company provide digital transmission facilities via copper or fiber cables to the cell site with connectivity through the telephone network back to the carrier's land line connection. The GCA and NKRD are not within a telephone company's service area; the location is so remote that construction charges to build a fiber optic line to the area is cost prohibitive. For the North Rim GCA, the carrier's only option for backhaul is to install a microwave radio system between the cell site and a location where they can access a telephone company's network.

In summary this Proposed Action would:

- Provide more reliable wireless telephone service for the Highway 67 corridor from Jacob Lake to the GCNP entrance station.
- Provide for increased microwave backhaul capacities to accommodate current and projected demand for wireless telephone and broadband internet services.
- Provide wireless communications facilities on federal land consistent with the requirements of the Telecommunications Act of 1994 that will accommodate all carriers that are licensed by the FCC to provide service in the GCNP area.

PROPOSED ACTION – TOWER AND EQUIPMENT BUILDINGS

The KNF is considering authorizing construction of two new wireless communication tower facilities called VT Hill Wireless Communications Facility and Telephone Hill Wireless Communications Facility. The proposed VT Hill tower facility would be located on the west side of SR 67 near De Motte Park, adjacent to the existing Forest Service VT Hill communications tower and equipment shelter, approximately 20 miles south of Jacob Lake, AZ, in the SE ¼ of Section 26, T35N, R2E, Gila and Salt River Base Line Meridian (Figure 1). The Telephone Hill Wireless Communications Facility would be a new site located on the east side of SR 67, approximately 12 miles south of Jacob Lake, AZ in the SE ¼ of Section 3, T36N, R2E, Gila and Salt River Base Meridian, (Figure 2). Both sites are within Coconino County, Arizona.

The major components of the proposed facilities are as follows:

VT Hill

- A new free-standing lattice tower up to 180 feet above ground level (AGL) (Figure 3) is proposed to be constructed adjacent to the existing KNF communications tower. Lighting on this tower is not anticipated under current Federal Aviation Administration guidelines.

- The new colocation tower would provide wireless antennae space for up to four wireless carriers and microwave dishes for backhaul connectivity to the proposed "Telephone Hill" communication site.
- Equipment shelter to accommodate four wireless carriers and the DW Tower microwave system equipment (Figure 4). Equipment buildings and towers would house all tenants and would be owned and managed by the communication site leaseholder (DW Tower).
- Commercial electric power is available on site from an existing overhead power line.
- The proposed site has existing KNF forest road access.
- Equipment shelter and antenna tower space for KNF and other public safety agency communications equipment.
- Equipment building designed to house tenants within 100 feet by 100 feet lease area as shown on the site plan concept drawing (Figure 4). Construction on the site would require the removal of approximately 20 spruce-fir and some aspen trees under 20 inches in diameter or less. Trees would be avoided where possible.
- A common microwave system would be required in order to reduce the number of microwave dishes installed on the tower and efficiently manage bandwith. By using a common system only one dish will be needed. A common dish would reduce the number of dishes by at least 3 and provides an opportunity for a less robust tower which will reduce visibility of the tower.
- The tower and equipment shelters would be painted a Forest Service standard flat, dark brown color or a color directed by the Forest Service to best blend with the forest background.
- Tenants would primarily be wireless communications carriers (cellular, PCS, EMRS) operating using radio frequencies authorized by the Federal Communications Commission.
- All galvanized shiny surfaces including the tower, ice bridges, antennae support structures, and chain link fencing would be treated with a product called Natina Steel to mitigate shiny reflective surfaces on the tower and chain link fence. Natina Steel (a.k.a. galvanized metal stain) is used to create a rustic brown finish on galvanized surfaces that will not fade, crack, or peel over time from sun exposure. Typical pigment-based colorants (i.e., paint and/or powder coating) fade, crack, and start to peel within only a few years. Natina Steel reacts with the zinc in galvanized metal and quickly (over 1 to 3 weeks depending on sunlight and heat intensity) creates a natural rustic brown patina to better blend galvanized surfaces/structures into surrounding terrains.
- No temporary use areas are anticipated. All construction activities would be contained within the lease area.
- This would be a low power communications site (<1000 watts ERP). The location does not have the physical, social, or geographic characteristics for high power broadcast or other uses which will not be compatible with wireless technology.
- All radio facilities shall be constructed and maintained in accordance with the Motorola R56 standards and/or other applicable recognized industry standards.

Telephone Hill

- A new free-standing lattice tower up to 180 feet AGL is proposed to be constructed (see Figure 5). The proposed tower will provide antennae positions for up to four wireless carriers and a microwave dish for backhaul connectivity to the proposed "VT Hill" communication site.
- Equipment shelters to house up to four wireless carriers and the DW Tower microwave system equipment (Figure 6). Equipment buildings and towers would house all tenants and would be owned and managed by the communication site leaseholder (DW Tower).
- Power will be provided by a solar hybrid system involving solar panels, batteries and propane generators (Figure 7).
- The proposed site has existing Forest road access.
- Equipment shelter and antenna tower space for KNF and other public safety agency communications equipment.
- Equipment building designed to house tenants within 100 feet by 150 feet lease area as shown on the site plan concept drawing (Figures 6).
- A common microwave system would be required in order to reduce the number of microwave dishes installed on the tower and efficiently manage bandwith.
- The tower and equipment shelters would be painted a Forest Service standard flat, dark brown color or a color directed by the Forest Service to best blend with the forest background.
- Tenants would primarily be wireless communications carriers (cellular, PCS, EMRS) operating using radio frequencies authorized by the Federal Communications Commission.
- All galvanized shiny surfaces including the tower, ice bridges, antennae support structures, and chain link fencing would be treated with a product called Natina Steel to mitigate shiny reflective surfaces on the tower and chain link fence. Natina Steel (a.k.a. galvanized metal stain) is used to create a rustic brown finish on galvanized surfaces that will not fade, crack, or peel over time from sun exposure. Typical pigment-based colorants (i.e., paint and/or powder coating) fade, crack, and start to peel within only a few years. Natina Steel reacts with the zinc in galvanized metal and quickly (over 1 to 3 weeks depending on sunlight and heat intensity) creates a natural rustic brown patina to better blend galvanized surfaces/structures into surrounding terrains.
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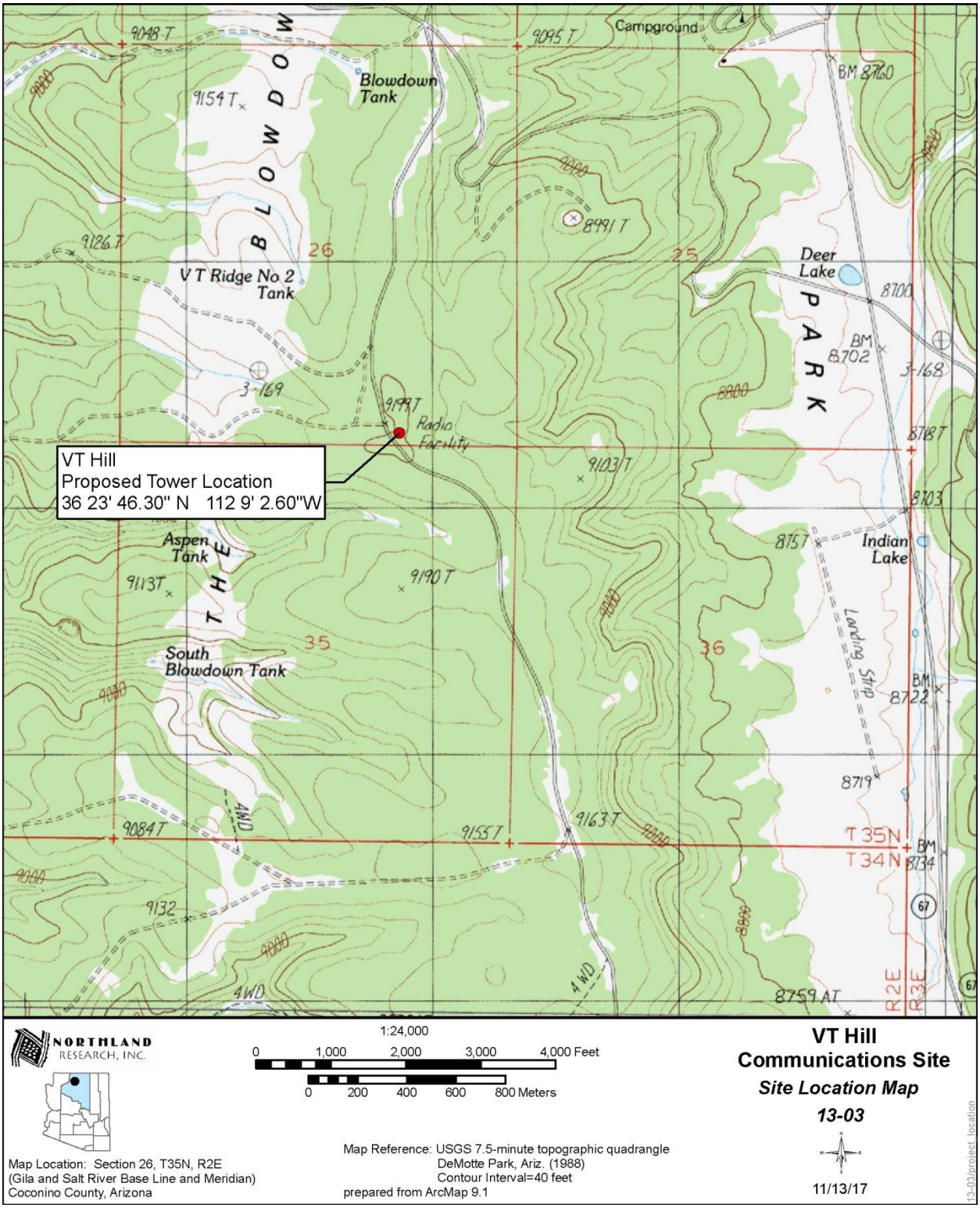

Figure 1 – VT Hill Project Location Map.

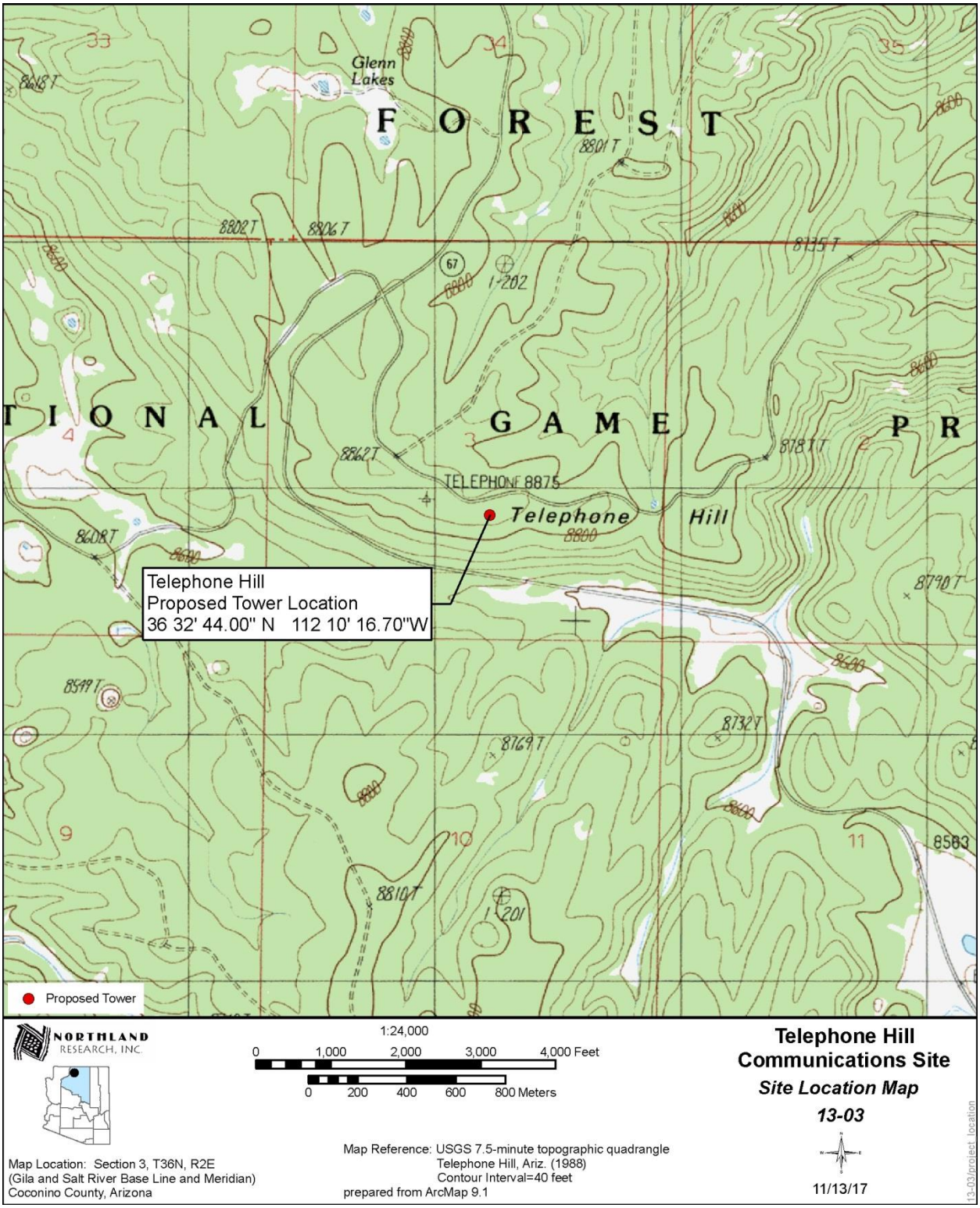

Figure 2 – Telephone Hill Project Location Map.

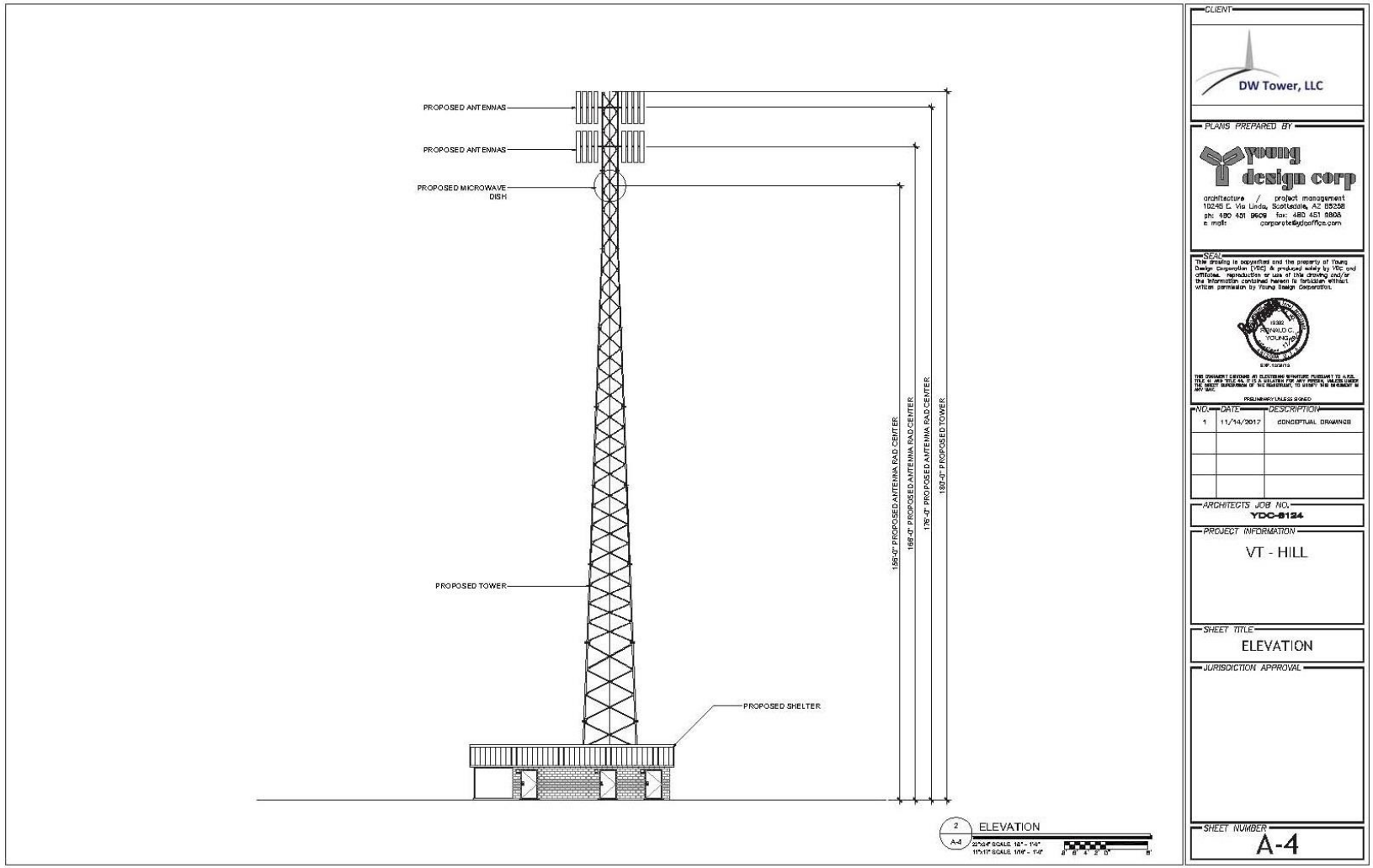

Figure 3 - VT Hill Tower Concept Drawing.

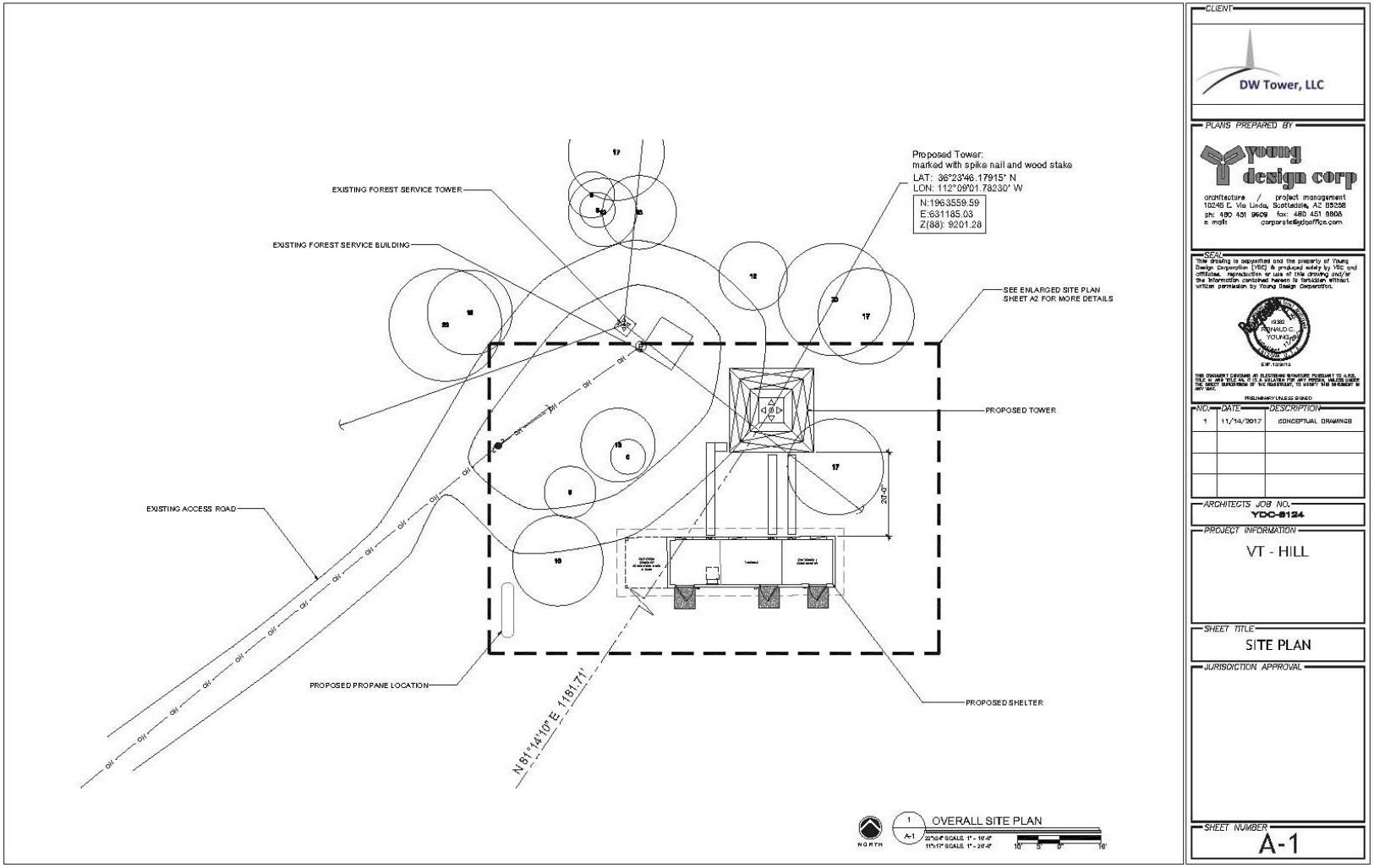

Figure 4 – VT Hill Concept Site Plan Drawing.

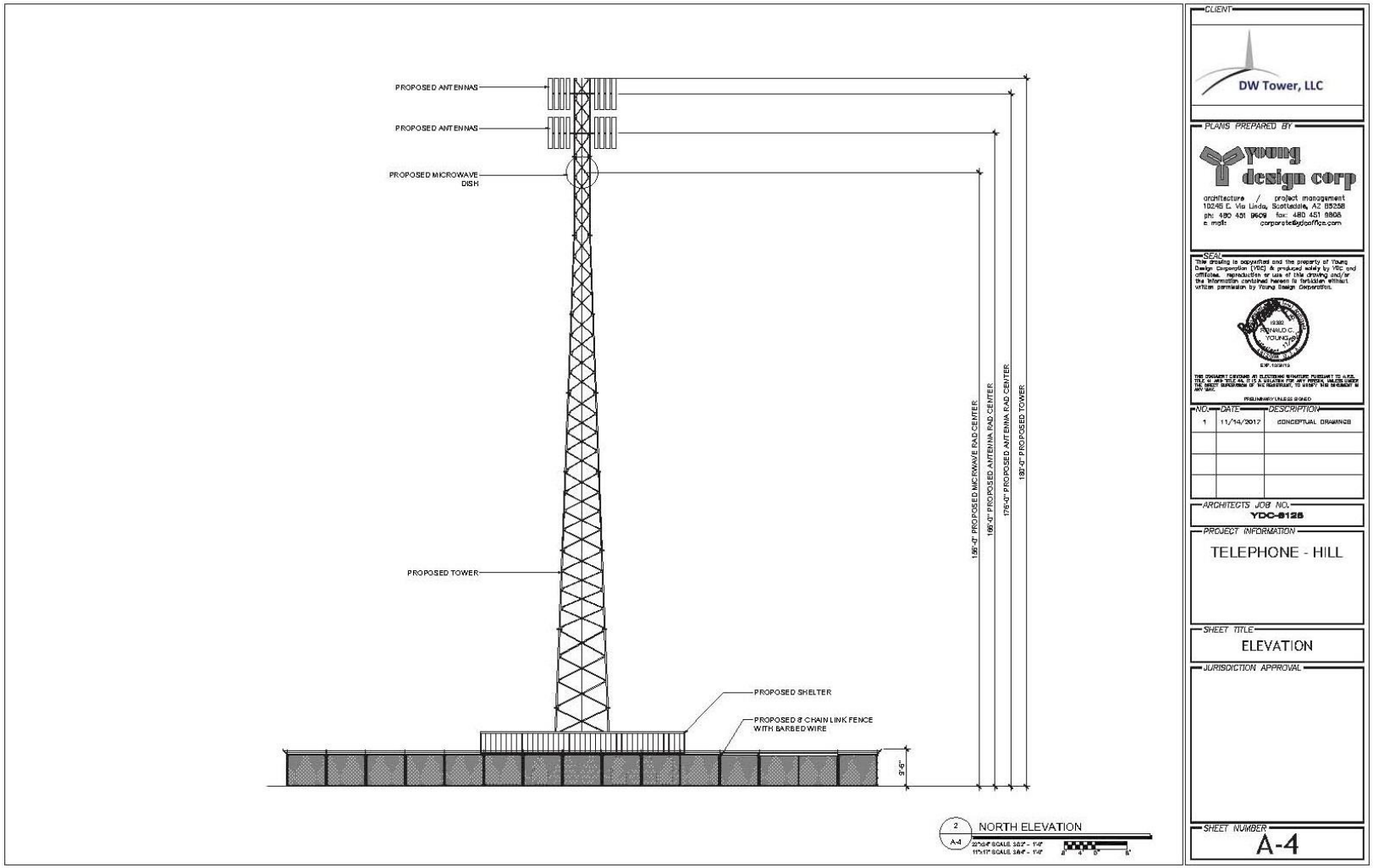

Figure 5 - Telephone Hill Tower Concept Drawing.

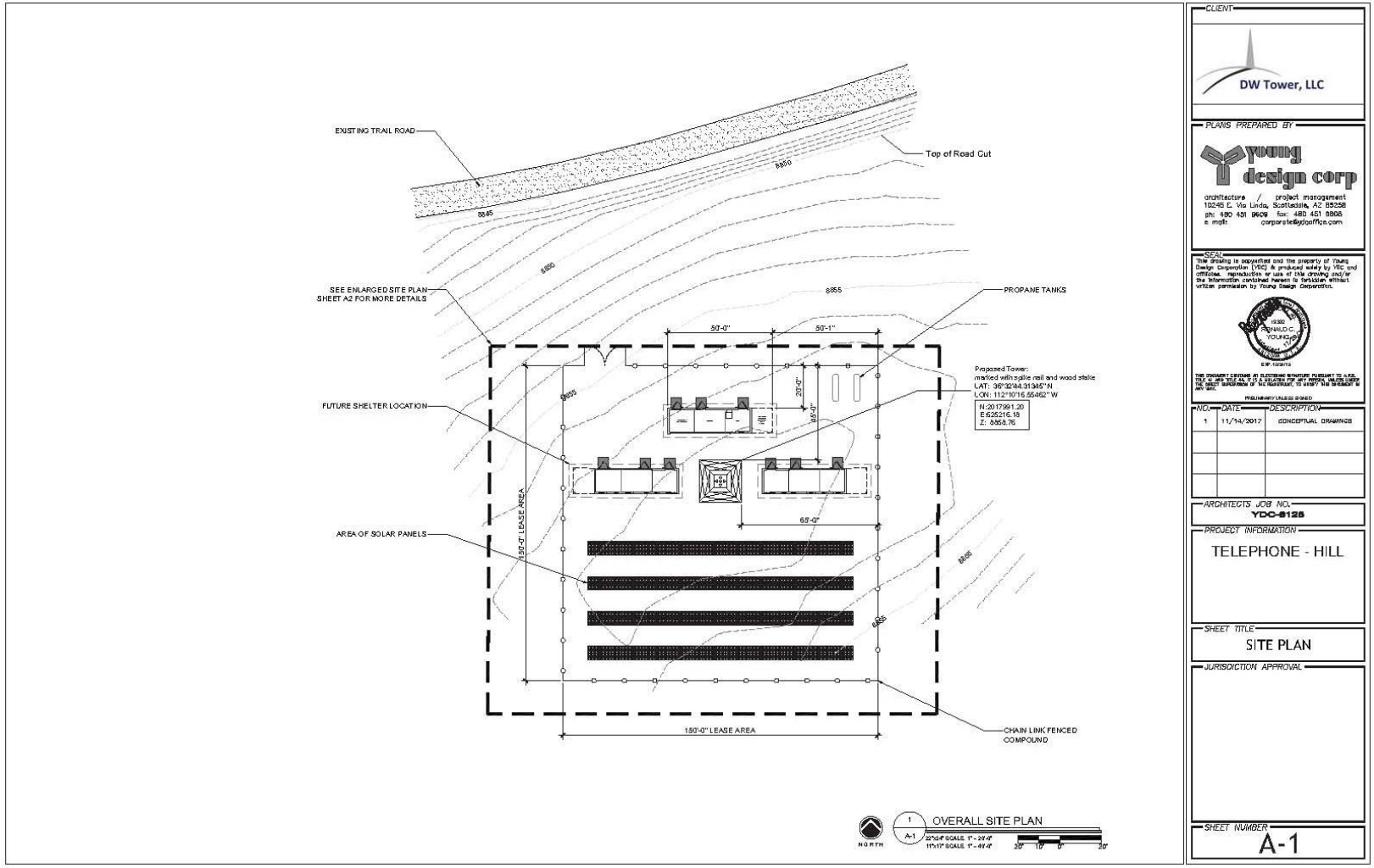

Figure 6 – Telephone Hill Concept Site Plan.

Figure 7 – Telephone Hill Communications Site – DWT Solar Design. This photo represents a self-contained stand-alone solar powered communications site (example from Skinner Ridge Communications Site).